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## Journal of Affective Disorders

journal homepage: [www.elsevier.com/locate/jad](http://www.elsevier.com/locate/jad)

## Research paper

The relationship between challenging parenting behaviour and childhood anxiety disorders<sup>☆</sup>Rebecca S. Lazarus<sup>a,\*</sup>, Helen F. Dodd<sup>b</sup>, Mirjana Majdandžić<sup>c</sup>, Wieke de Vente<sup>c</sup>, Talia Morris<sup>a</sup>, Yulisha Byrow<sup>a</sup>, Susan M. Bögels<sup>c</sup>, Jennifer L. Hudson<sup>a</sup><sup>a</sup> Centre for Emotional Health, Department of Psychology, Macquarie University, Australia<sup>b</sup> School of Psychology and Clinical Language Sciences, University of Reading, UK<sup>c</sup> Research Institute of Child Development and Education, University of Amsterdam, The Netherlands

## ARTICLE INFO

## Article history:

Received 4 September 2015

Received in revised form

26 October 2015

Accepted 17 November 2015

Available online 26 November 2015

## Keywords:

Anxiety disorders

Challenging parenting behaviour

Fathers

Mothers

## ABSTRACT

**Background:** This research investigates the relationship between challenging parenting behaviour and childhood anxiety disorders proposed by Bögels and Phares (2008). Challenging parenting behaviour involves the playful encouragement of children to go beyond their own limits, and may decrease children's risk for anxiety (Bögels and Phares, 2008).

**Method:** Parents ( $n=164$  mothers and 144 fathers) of 164 children aged between 3.4 and 4.8 years participated in the current study. A multi-method, multi-informant assessment of anxiety was used, incorporating data from diagnostic interviews as well as questionnaire measures. Parents completed self-report measures of their parenting behaviour ( $n=147$  mothers and 138 fathers) and anxiety ( $n=154$  mothers and 143 fathers). Mothers reported on their child's anxiety via questionnaire as well as diagnostic interview ( $n=156$  and 164 respectively). Of these children, 74 met criteria for an anxiety disorder and 90 did not.

**Results:** Fathers engaged in challenging parenting behaviour more often than mothers. Both mothers' and fathers' challenging parenting behaviour was associated with lower report of child anxiety symptoms. However, only mothers' challenging parenting behaviour was found to predict child clinical anxiety diagnosis.

**Limitations:** Shared method variance from mothers confined the interpretation of these results. Moreover, due to study design, it is not possible to delineate cause and effect.

**Conclusions:** The finding with respect to maternal challenging parenting behaviour was not anticipated, prompting replication of these results. Future research should investigate the role of challenging parenting behaviour by both caregivers as this may have implications for parenting interventions for anxious children.

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## 1. Introduction

Anxiety disorders are amongst the most common and debilitating forms of psychopathology experienced by children and adolescents, with a prevalence rate of approximately 5% (Rapee, 2012). Symptom onset often occurs in early childhood, sometimes as early as 2–3 years of age (Egger and Angold, 2006). Moreover, anxiety disorders are often chronic, persisting into adulthood (Merikangas et al., 2010). Growing recognition of the personal, social, and economic impact of anxiety disorders (Bodden et al., 2008; Zubrick et al., 2000), highlights the importance of research

into their aetiology and maintenance (Bayer et al., 2011; Pahl et al., 2012). A number of early risk factors for the development of anxiety disorders have been identified, including parenting factors and parental anxiety.

Current theory and research has emphasised the relationship between parenting factors and the development and maintenance of childhood anxiety disorders (Creswell et al., 2011). Much of what is currently known about the influence of parenting on childhood anxiety disorders focuses on maternal overinvolved and overcontrolling parenting styles, and maternal anxiety (McLeod et al., 2007; Murray et al., 2009; Rapee et al., 2009). Maternal overinvolvement and control has been consistently linked with the development of childhood anxiety disorders (Hirshfeld et al., 1997; Hudson and Rapee, 2001; Siqueland et al., 1996). Similarly, paternal overinvolvement and overcontrol have been associated with child anxiety (e.g. Greco and Morris (2002) and Hudson and

<sup>☆</sup>This study was supported by the Australian Research Council Grant DP0878609. All authors declare that they have no conflict of interest.

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Rapee (2002)), although existing studies show disparate and at times conflicting results. Such discrepancies remain difficult to resolve due to the overwhelming focus on the relationship between maternal parenting behaviours and childhood anxiety disorders and the limited number of studies examining fathers (Bögels and Phares, 2008; Phares and Compas, 1992).

Of the extant research conducted with fathers, most has focused on the father's role with respect to normal child development-ignoring the potential relationship between paternal behaviour and child psychopathology (Brennan et al., 2002). An example for the direct role of the father, specifically for child social anxiety, comes from research by Bögels et al. (2011), which found that children with high social anxiety were more influenced by fathers' anxious reactions to ambiguous vignettes than mothers' reactions. That is, anxious children may put higher weight on fathers' responses than mothers' responses when faced with possible threat and deciding if a situation is dangerous and should be avoided (see Bögels et al. (2011)). Considering that extant studies indicate poor psychological outcomes for children of anxious fathers, there is a clear and pressing need for further research in this area (Phares and Compas, 1992).

Bögels and Phares (2008) proposed a model that suggests fathers may have a particularly important influence over children's self competence and anxiety prevention via challenging parenting behaviour. This concept of 'challenging parenting behaviour' has been coined to describe a style of parenting that can be both socio-emotional and physical (Majdandžić et al., 2014). It can encompass play (particularly rough-and-tumble-play), and risk taking, and may also include teasing, giving the child a fright, encouraging assertiveness, and letting the child lose a game (Majdandžić et al., 2010). Even though mothers may encourage behaviours such as risk taking, especially with their sons (Morronegiello and Dawber, 2000), studies have shown that fathers are less likely than mothers to intervene and stop children during risky activities (Fagot et al., 1985) and less likely to be overprotective (Grossmann et al., 2002; Lindsey and Mize, 2001; Paquette and Bigras, 2010). According to Paquette (2004), a central component to father-child interactions is vigorous, physical play, termed 'Rough-and-Tumble' play. Paquette (2004) argues that exposure to safe risk environments such as rough-and-tumble play, enables the child to be braver in unfamiliar situations as well as stand up for themselves, which in turn fosters the child's confidence. If exposure to safe risks such as rough-and-tumble play are beneficial for the child, Bögels and Phares (2008) hypothesise that if fathers do not encourage these interactions, the child is at risk of developing anxiety. Accumulating research in this area suggests that challenging parenting behaviour may buffer early separation, stranger, novelty and social anxiety (Bögels and Phares, 2008; Majdandžić et al., 2014).

One potential factor that may impact on the degree to which parents use challenging parenting behaviour is the parent's own psychopathology, in particular parental anxiety. Studies observing the parenting behaviour of anxious mothers in clinical (Whaley et al., 1999) and community samples (Woodruff-Borden et al., 2002) have found that during interactions with their children, anxious mothers have been noted to grant their children less autonomy. Further, research by Turner and colleagues (Turner et al., 2003), found that anxiety disordered parents were less likely to engage in physical play with their child than non-anxious parents. Bögels et al. (2008) suggest that if the father's role is to engage in challenging parenting behaviour such as rough-and-tumble play, paternal anxiety might interfere with such behaviour. Moreover, studies have shown that a past history of anxiety disorders can continue to have an effect on cognitions and parenting behaviours, even in the absence of a current disorder (Hollon et al., 1986).

Although it has been suggested that fathers may be more likely than mothers to engage in challenging parenting behaviour, child

gender may moderate this relationship. For example, some research has suggested that parents encourage more risk-taking behaviours in their sons compared to their daughters (Morronegiello and Dawber, 2000) and that fathers engage in more physical types of play with their sons compared with their daughters (Lindsey and Mize, 2001). Given these findings, an investigation of the association between challenging parenting behaviour and anxiety should consider not only the gender of the parent but also the gender of the child.

There is currently only one parent-report measure for assessing challenging parenting behaviour, the Challenging Parenting Behaviour Questionnaire (CPBQ; Majdandžić et al. (2010)). A recent study by Majdandžić et al. (2014) is, to our knowledge, the first to empirically investigate this broader concept of challenging parenting behaviour. In this study, maternal and paternal challenging parenting behaviour was measured via observation and their children's (aged 2 and 4 years respectively) social anxiety was observed at two time-points, 6 months apart. The results indicated that for the older preschool-aged children, paternal challenging parenting behaviour was associated with decreases in social anxiety, whereas maternal challenging behaviour was associated with an increase in child social anxiety. As this was the first study conducted in this area, it will be important to replicate these results as well as expand this concept to cover childhood anxiety at both symptom and disorder levels.

The current study extends these findings from Majdandžić et al. (2014), utilising a clinical measure of child anxiety and also a measure of parental anxiety to examine the association between mothers' and fathers' challenging parenting behaviour and child anxiety in preschool-aged children. The preschool years represent an optimum period to examine these associations as father-child interaction peaks at this age (Grossmann et al., 2002), and it is the time when early signs of anxiety may emerge (Egger and Angold, 2006). The purpose of the present study was therefore threefold: (1) to examine the association between challenging parenting behaviour and childhood anxiety disorders in both fathers and mothers; (2) to examine the association between parental anxiety and challenging parenting behaviour; and (3) to consider the potential effects of child gender on these relationships. In line with these aims it was hypothesised that: (1) fathers will report more challenging parenting behaviour than mothers (2) parents who report higher levels of their own anxiety will report lower levels of challenging parenting behaviour; (3) parents will report higher levels of challenging parenting behaviour towards their male children compared to their female children; (4) children whose fathers report more challenging parenting behaviour will exhibit lower levels of anxiety (at both symptom and disorder levels) compared to those whose fathers report less challenging parenting behaviour; (5) also of interest was to examine the relationship between mothers' challenging parenting behaviour and child anxiety (at both symptom and disorder levels). In addition, an exploratory analysis on the impact of child gender on the relationship between challenging parenting and child anxiety was conducted.

## 2. Method

### 2.1. Participants

Participants were 164 preschool children (92 girls and 72 boys) ranging in age from 3.4 to 4.8 years ( $M=3.97$  years,  $SD=3.9$ ), and their mothers ( $n=164$ ) and fathers ( $n=144$ ). Children were recruited via advertisements in a local parenting magazine and flyers distributed to local preschools as part of a randomised control trial (RCT) of an intervention for behaviourally inhibited children.

The current study was conducted as part of baseline assessments for the RCT. Two different advertisements were used, the first requested for 'shy' children, the second for 'confident' children. Mothers completed the Approach subscale of the Short Temperament Scale for Children via telephone as a screening questionnaire (STSC; Sanson et al. (1994)). The STSC is an abbreviated version of the Childhood Temperament Questionnaire (Sanson et al., 1994) and has been shown to have adequate validity, good reliability and internal consistency (Sanson et al., 1987). Children who score low on the Approach subscale after approximately 3 years of age have a greater than twofold chance of showing anxiety problems in adolescence (Prior et al., 2000). High test–retest reliability for the Approach scale has been demonstrated in previous studies ( $r=.90$ ) (Sanson et al., 1987). In the current sample, internal consistency was excellent ( $\alpha=.92$ ). Only children with scores one standard deviation above or below the normative mean on the Approach scale were invited to participate in the study and were classified as behaviourally inhibited (BI,  $n=85$ ) or behaviourally uninhibited (BUI,  $n=79$ ). Of the BI children, 69 met criteria for an anxiety disorder (AD), using the ADIS-P-IV (see below) and five BUI children also met criteria for an anxiety disorder. These 74 children (45.1%; 41 girls and 33 boys) were included in the AD group. The remaining 90 children (54.9%; 51 girls and 39 boys) who did not meet criteria for an anxiety disorder were included in the Non-AD group.

Participants predominantly identified as being of Oceanic ethnicity (69.5%), 14.6% as Asian, 6.1% European, and 2.4% American, 69.5% were from middle to high income families (annual income of \$80,000 or greater) and 90.2% of children were from two-parent homes. Mothers were aged between 24 and 47 years ( $M=36.59$  years,  $SD=4.63$ ) and fathers between 24 and 61 years ( $M=39.01$  years,  $SD=5.18$ ).

## 2.2. Measures

### 2.2.1. Child anxiety disorders

The Anxiety Disorders Interview Schedule for DSM-IV Parent Version (ADIS-P-IV; Silverman and Albano (1996)) was used with mothers ( $n=164$ ) to assess child anxiety. Items referring to school were changed to 'preschool'. Interviews were conducted and diagnoses assigned by postgraduate students in psychology trained by the last author. The ADIS-P-IV has excellent interrater agreement of kappa=1.00 for an overall anxiety diagnosis and between kappa=.80 and kappa=.93 for specific anxiety diagnoses (Lyneham et al., 2007). Reliability for the presence of a clinical anxiety disorder in the current sample was excellent (kappa=.95). Diagnoses were only considered 'clinical' if the severity rating was four or greater, consistent with ADIS guidelines (Silverman and Albano, 1996).

### 2.2.2. Child anxiety symptoms

Mothers ( $n=157$ ) completed the Preschool Anxiety Scale (PAS; Spence et al. (2001)) to gain a general overall measure of child anxiety in the present sample. The PAS contains 28 items reflecting areas broadly consistent with DSM-IV diagnostic categories; social phobia, separation anxiety, generalised anxiety, obsessive-compulsive disorder, and fears of physical injury. The PAS has been found to have good construct validity, satisfactory internal consistency, and good test–retest reliability (Spence et al., 2001). In the present study, internal consistency for the PAS total score was excellent ( $\alpha=.94$ ).

### 2.2.3. Parent anxiety symptoms

The Depression Anxiety and Stress Scale (DASS-21; Lovibond and Lovibond (1995)) was administered to both mothers ( $n=155$ ) and fathers ( $n=144$ ) in order to gain a measure of parental

anxiety. The DASS-21 is a quantitative measure of depression, anxiety, and stress and is a widely used measure of adult anxiety (Osman et al., 2012). It has good factor structure, concurrent validity and internal consistency, with Cronbach's alpha's for the subscales found at .94 for Depression, .87 for Anxiety, and .91 for Stress (Antony et al., 1998). In the present study the Cronbach's alpha for the anxiety scale was acceptable ( $\alpha=.69$ ) for both mothers and fathers.

### 2.2.4. Challenging parenting behaviour

Mothers ( $n=148$ ) and fathers ( $n=139$ ) completed the Challenging Parenting Behavior Questionnaire (CPBQ; Majdandžić et al. (2010)), 4–6 year-old version. The CPBQ is a 43-item parent-report scale that assesses challenging behaviour through parents' encouragement of risk taking, rough-and-tumble play, assertiveness, competition, social daringness, and teasing the child. A total score is constructed for an overall measure of challenging parenting behaviour. Parents were asked to rate statements about interactions with their child (e.g., 'If my child thinks that he/she can not do something, I encourage him/her to try again') on a 5-point Likert scale (1 = *not applicable*, 5 = *completely applicable*). Six items were reverse scored. This is a newly developed measure and as yet no psychometric papers have been published on its reliability and validity; however, the psychometric properties of the younger age versions of this questionnaire (i.e., 4 months, 1 year and 2.5 years), have been found to be good (Majdandžić et al., 2015). The Cronbach's alpha for the total Challenging Parenting Behaviour score was good ( $\alpha=.86$ ).

## 2.3. Procedure

Macquarie University Ethics Committee approved all procedures prior to commencement. Mothers provided written consent for themselves and their child to participate in the ongoing study and were sent links to online questionnaires for themselves and the child's father. For mothers, questionnaires included demographic information, the DASS-21, the CPBQ and the PAS. For fathers, questionnaires included demographic information, the DASS-21, and the CPBQ. ADIS-IV-P interviews were conducted with mothers during a 2 h research session at Macquarie University. Families of BI children were reimbursed \$100 for their time<sup>1</sup> and were offered an intervention-parenting programme at the Centre for Emotional Health, Macquarie University. Families of BUI children were reimbursed \$50 for attending one research session. Participants also completed additional questionnaires as well as observational tasks that are not presented here. It is noted that fathers were not requested to complete measures pertaining to childhood anxiety (PAS and ADIS-IV-P). As fathers were not required to attend the research session, questionnaire packages were restricted to reduce time constraints for fathers and to facilitate survey completion. Data for the current study pertains to the first research session and baseline questionnaires for the RCT.

## 2.4. Data preparation

All variables were checked for conformity to the assumption of normal distribution. Distributions for mother-report PAS total scores and mother and father report DASS- anxiety scores were positively skewed and contained multiple outliers so correction was attempted using square-root transformation. The transformed variables continued to violate the Kolmogorov–Smirnov and

<sup>1</sup> These families were required to participate in three research sessions at Macquarie University and were offered five 1 h sessions of a parenting intervention as part of a RCT.

Shapiro–Wilk statistics. However, inspection of the respective histograms indicated improvements in skewness and kurtosis, with kurtosis values ranging between  $-.110$  and  $-.94$ , and skewness values ranging between  $-.12$  and  $.30$ . Further, the square-root transformation removed any outliers. Consequently, transformed variables were used for all analyses.

Due to missed responses or the unavailability of mothers and fathers to complete online questionnaires, there was a small amount of missing data. Analyses were conducted with all available data, the number in brackets shows the number of cases with complete data for each variable: mother-report PAS total scores (156), child diagnostic group (164), mother DASS anxiety total score (154), mother CPBQ total score (147), father DASS anxiety total score (143) and father CPBQ total score (138). A significance level of 0.05 was set for all analyses.

### 2.5. Data analysis plan

To examine whether fathers reported more challenging parenting behaviour than mothers (hypothesis 1), a paired-samples *t*-test was conducted. The relationship between parental anxiety and challenging parenting behaviour (hypothesis 2) was examined through hierarchical multiple regression analyses (MRA), whilst controlling for potential covariates (e.g. parental age). The hypothesis (3), that parents would report higher levels of challenging parenting behaviour for their male children compared to their female children, was examined via independent samples *t*-test.

To examine the association between challenging parenting behaviour and child anxiety (hypotheses 4 and 5), and whether child gender moderates this association, two dependent variables were examined across a series of regression analyses. Both dependent variables were measures of child anxiety: mother report of child anxiety symptoms on the PAS (a continuous measure); presence of an anxiety diagnosis based on the ADIS-IV-P (a dichotomous variable-anxiety group). For child anxiety symptoms, hierarchical MRA was used. For anxiety group, logistic regression was used. Of primary interest were the main effects of challenging parenting behaviour and child gender on child anxiety, as well as the interaction between child gender and challenging parenting behaviour.

## 3. Results

### 3.1. Preliminary analyses

Means, standard deviations, and number of participants for demographic and predictor variables split by anxiety group (AD/Non-AD) are shown in Table 1. Chi-square analyses were conducted to examine differences between anxiety groups (AD/Non-AD) on demographic variables. There were no significant differences between anxiety groups on child age, maternal and paternal age, marital status, family income or ethnicity. A series of one-way between groups analyses of variance (ANOVAs) were conducted, examining the relationship between demographic variables and all continuous measures relating to child anxiety (PAS total score), challenging behaviour (father and mother CPBQ total scores), and parent anxiety (father and mother total DASS anxiety scores), none were significant (all *p*'s > .05).

Table 2 shows the bivariate correlations amongst all continuous measures. A positive, medium sized correlation was found between mothers' and fathers' challenging parenting behaviour. The magnitude of the remaining correlations is small, but several significant associations were found. In contrast with expectations, an association between paternal anxiety and challenging parenting behaviour was not apparent (*p* > .05). Similarly, mothers' anxiety

**Table 1**  
Descriptive statistics for demographic and predictor variables split by anxiety group.

	AD ( <i>n</i> = 74)	Non-AD ( <i>n</i> = 90)
<b>Demographics</b>		
Child age in months	<i>M</i> = 48.15 ( <i>SD</i> = 4.09)	<i>M</i> = 47.32 ( <i>SD</i> = 3.76)
Child gender (percentage female)	55%	57%
Mother age in years	<i>M</i> = 35.71 ( <i>SD</i> = 4.54)	<i>M</i> = 37.34 ( <i>SD</i> = 4.61)
Father age in years	<i>M</i> = 38.15 ( <i>SD</i> = 4.69)	<i>M</i> = 39.73 ( <i>SD</i> = 5.48)
<b>Gross family income (percentage of group)</b>		
\$1–\$19,000	4.1%	0%
\$20,000–\$39,000	4.1%	5.7%
\$40,000–\$79,000	21.6%	19.5%
\$80,000+	68.9%	72.4%
Missing	1.3%	2.4%
<b>Ethnicity</b>		
Oceanic	60.8%	76.7%
European	6.7%	5.5%
Asian	24.3%	6.7%
American	2.7%	2.2%
Missing	5.5%	8.9%
<b>Predictor variables</b>		
PAS total score	<i>M</i> = 42.53 ( <i>SD</i> = 15.29)	<i>M</i> = 12.16 ( <i>SD</i> = 12.16)
Mother CPBQ total score	<i>M</i> = 3.10 ( <i>SD</i> = 0.50)	<i>M</i> = 3.30 ( <i>SD</i> = 0.46)
Father CPBQ total score	<i>M</i> = 3.24 ( <i>SD</i> = 0.50)	<i>M</i> = 3.38 ( <i>SD</i> = 0.51)
Mother DASS anxiety score	<i>M</i> = 2.92 ( <i>SD</i> = 2.49)	<i>M</i> = 1.64 ( <i>SD</i> = 2.02)
Father DASS anxiety score	<i>M</i> = 1.76 ( <i>SD</i> = 2.01)	<i>M</i> = 1.58 ( <i>SD</i> = 2.25)

Note. DASS=Depression Anxiety Stress Scales, PAS=Preschool Anxiety Scale, CPBQ=Challenging Parenting Behavior Questionnaire.

**Table 2**  
Bivariate correlations between continuous measures.

Variable	Mother anxiety (DASS)	Father anxiety (DASS)	Child anxiety (PAS)	Mother CPBQ
Mother anxiety (DASS)	–	–	–	–
Father anxiety (DASS)	.07	–	–	–
Child anxiety (PAS)	.29**	.15	–	–
Mother CPBQ	–.08	.07	–.23**	–
Father CPBQ	.06	–.12	–.18*	.44**

Note. DASS=Depression Anxiety Stress Scales, PAS=Preschool Anxiety Scale, CPBQ=Challenging Parenting Behavior Questionnaire.

\*\* Statistical significance: *p* < .01.

\* *p* < .05.

and challenging parenting behaviour were not associated (*p* > .05). Mothers' report of child anxiety symptoms on the PAS had significant weak negative associations with both maternal and paternal challenging parenting behaviour; higher scores on the respective CPBQ scores were associated with lower maternal report of child anxiety symptoms on the PAS.

### 3.2. Hypothesis analyses

#### 3.2.1. Maternal and paternal challenging parenting behaviour

A paired-samples *t*-test was conducted to compare mothers' and fathers' challenging parenting behaviour scores. As expected, fathers reported significantly more challenging parenting behaviour (*M* = 3.32, *SD* = .51), than mothers (*M* = 3.20, *SD* = .49), *t* (132) =  $-2.58$ , *p* = .01, with a small effect, *d* = .24.



### 3.2.2. Parental anxiety and challenging parenting behaviour

As the correlation (see Table 2) between maternal and paternal challenging parenting behaviour was significant with a moderate effect, separate regression models were created for mothers and fathers. For each analysis variables were entered in the following order: (1) parent age, and (2) parent DASS anxiety score. Prior to conducting a hierarchical MRA, relevant assumptions were tested. As mentioned, distributions for mother and father anxiety scores (DASS) were not normally distributed, analyses conducted with transformed variables are reported. All remaining assumptions for the MRA were met.

For Model 1, fathers' age was entered at Step 1 and accounted for a non-significant 0.9% of the variance in fathers' challenging parenting behaviour,  $F(1,134)=1.21$ ,  $p=.274$ . On Step 2, father DASS anxiety was added to the model, accounting for an additional 2.2% of the variance in fathers' challenging parenting behaviour and was non-significant ( $\Delta R^2=.022$ ,  $\Delta F(1,133)=2.96$ ,  $p=.088$ ).

For Model 2, examining maternal anxiety and challenging parenting behaviour, mothers' age was entered at Step 1 and accounted for a non-significant 1.6% of the variance in mothers' challenging parenting behaviour,  $F(1,145)=2.39$ ,  $p=.124$ . On Step 2, mother DASS anxiety was added accounting for an additional 0.8% of the variance in mothers' challenging parenting behaviour and was non-significant ( $\Delta R^2=.008$ ,  $\Delta F(1,144)=1.14$ ,  $p=.288$ ).

Unstandardised ( $B$ ) and standardised ( $\beta$ ) regression coefficients, and squared semi-partial correlations ( $sr^2$ ) for each predictor in these regression models are reported in Table 3.

### 3.2.3. Challenging parenting behaviour and child gender

Independent samples  $t$ -tests were used to compare mothers' and fathers' challenging parenting behaviour towards their male and female children. There was no significant difference between mothers' challenging parenting behaviour towards male ( $M=3.14$ ,  $SD=.52$ ) and female ( $M=3.10$ ,  $SD=.47$ ) children,  $t(145)=.44$ ,  $p=.66$ . Likewise, fathers' challenging parenting behaviour did not differ significantly between male ( $M=3.26$ ,  $SD=.53$ ) and female ( $M=3.18$ ,  $SD=.50$ ) children,  $t(135)=.83$ ,  $p=.41$ .

### 3.2.4. Maternal and paternal challenging parenting behaviour and child anxiety

As noted previously, separate regression models were created for mothers and fathers. For each analysis variables were entered in the following order: (1) challenging parenting behaviour, (2) child gender and (3) the interaction between challenging parenting behaviour and child gender. interaction terms were calculated by multiplying mean-centred independent variables.

**Table 3**  
Hierarchical multiple regression models predicting challenging parenting behaviour.

Variable	$B$ (95% CI)	$\beta$	$sr^2$
<b>Model 1</b>			
Step 1			
Father age	.01 (–.01, .03)	.09	.00
Step 2			
Father age	.01 (–.01, .02)	.09	.00
Father DASS	–.09 (–.19, .01)	–.15	.02
<b>Model 2</b>			
Step 1			
Mother age	–.01 (–.03, .00)	–.13	.02
Step 2			
Mother age	–.01 (–.03, .00)	–.14	.02
Mother DASS	–.05 (–.14, .04)	–.09	.00

Note. DASS=Depression Anxiety Stress Scale (DASS-21; Anxiety Scale).

**3.2.4.1. Child anxiety symptoms.** Prior to conducting a hierarchical MRA, relevant assumptions were tested. As mentioned, distributions for mother-report PAS were not normally distributed, analyses conducted with transformed variables are reported. All remaining assumptions for the MRA were met.

For Model 1, fathers' challenging parenting behaviour was entered at Step 1 and contributed significantly to the regression model,  $F(1,134)=5.53$ ,  $p=.02$ , accounting for 4% of the variance in child anxiety symptoms. On Step 2 child gender was added accounting for no additional variance in child anxiety symptoms and was non-significant ( $\Delta R^2=.00$ ,  $\Delta F(1,133)=.01$ ,  $p=.72$ ). A similar result was found when adding Step 3, the interaction between fathers' challenging parenting behaviour and child gender ( $\Delta R^2=.00$ ,  $\Delta F(1,132)=.01$ ,  $p=.90$ ).

For Model 2, examining maternal challenging parenting behaviour, on Step 1 of the hierarchical MRA, mothers' challenging parenting behaviour contributed significantly to the regression model,  $F(1,145)=9.21$ ,  $p=.003$ , accounting for a significant 6% of the variance in child anxiety symptoms. Similar to the hierarchical MRA for fathers, both Steps 2 and 3 contained non-significant predictors and contributed no additional variance in child anxiety symptoms (child gender;  $\Delta R^2=.00$ ,  $\Delta F(1,144)=.15$ ,  $p=.70$ , mother challenging parenting behaviour and child gender interaction;  $\Delta R^2=.00$ ,  $\Delta F(1,143)=.16$ ,  $p=.69$ ).

Unstandardised ( $B$ ) and standardised ( $\beta$ ) regression coefficients, and squared semi-partial correlations ( $sr^2$ ) for each predictor in these regression models are reported in Table 4.

**3.2.4.2. Presence of child clinical anxiety diagnosis.** Despite attempts at model reduction, the logistic regression model assessing fathers' challenging parenting behaviour on child anxiety diagnosis failed to reach statistical significance ( $p > .05$ ), indicating that the model was unable to distinguish between children with and without an anxiety diagnosis. Full data for this logistic regression model is reported in Table 5.

For mothers, Step 1 of the model was statistically significant,  $\chi^2(1, N=147)=5.93$ ,  $p=.015$  (see Table 6). Thus the initial model, containing mothers' challenging parenting behaviour as a predictor variable, was able to distinguish between children with and

**Table 4**  
Hierarchical multiple regression models predicting child anxiety symptoms.

Variable	$B$ (95% CI)	$\beta$	$sr^2$
<b>Model 1</b>			
Step 1			
Father CPBQ	–.84 (–1.55, –.13)*	–.20	.04
Step 2			
Father CPBQ	–.84 (–1.55, –.13)*	–.20	.04
Child gender	–.04 (–.76, .68)	–.01	<.001
Step 3			
Father CPBQ	–1.25 (–3.57, 1.07)	–.30	.01
Child gender	–.05 (–.77, .68)	–.01	<.001
Father CPBQ $\times$ child gender	.26 (–1.17, 1.70)	.10	<.001
<b>Model 2</b>			
Step 1			
Mother CPBQ	–1.09 (–1.81, –.38)**	–.24	.06
Step 2			
Mother CPBQ	–1.10 (–1.82, –.38)*	–.25	.06
Child gender	–.14 (–.83, .56)	–.03	<.001
Step 3			
Mother CPBQ	–1.54 (–3.81, .73)	–.34	.01
Child gender	–.14 (–.84, .56)	–.03	<.001
Mother CPBQ $\times$ child gender	.29 (–1.14, 1.73)	.10	<.001

Note. CPBQ=Challenging Parenting Behavior Questionnaire.

\* Statistical significance:  $p < .05$ .

\*\*  $p < .01$ .

**Table 5**  
Logistic regression with paternal variables predicting child clinical anxiety diagnosis.

Variable	B	S.E.	Wald	df	p	Odds ratio	95% C.I. for Odds ratio	
							Lower	Upper
Step 1								
Father CPBQ	−.59	.35	2.91	1	.088	.55	.28	1.093
Constant	−.21	.17	1.44	1	.230	.81		
Step 2								
Father CPBQ	−1.67	.35	3.01	1	.083	.54	.27	1.08
Child gender	−.14	.35	.18	1	.670	.86	.44	1.71
Constant	.02	.56	.00	1	.973	1.02		
Step 3								
Father CPBQ	−1.67	1.18	2.02	1	.155	.19	.02	1.89
Child gender	−.14	.35	.17	1	.678	.86	.44	1.72
Father CPBQ × child gender	.68	.71	.92	1	.338	1.98	.49	8.05
Constant	.03	.56	.00	1	.959	1.03		

Note. CPBQ=Challenging Parenting Behavior Questionnaire. N=138.

**Table 6**  
Logistic regression with maternal variables predicting child clinical anxiety diagnosis.

Variable	B	S.E.	Wald	df	p	Odds ratio	95% C.I. for Odds ratio	
							Lower	Upper
Step 1								
Mother CPBQ	−.84	.36	5.66	1	.017*	.43	.21	.86
Constant	−.18	.17	1.20	1	.274	.83		
Step 2								
Mother CPBQ	−.86	.36	5.76	1	.016*	.43	.21	.85
Child Gender	−.16	.34	.21	1	.647	.86	.44	1.66
Constant	.05	.55	.02	1	.921	1.06		
Step 3								
Mother CPBQ	−.76	1.12	.46	1	.500	.47	.05	4.25
Child gender	−.16	.34	.21	1	.645	.85	.44	1.66
Mother CPBQ × child gender	−.06	.71	.01	1	.928	.94	.23	3.79
Constant	.05	.55	.01	1	.920	1.06		

Note. CPBQ=Challenging Parenting Behavior Questionnaire. N=147.

\* Statistical significance:  $p < .05$ .

without an anxiety diagnosis. Once child gender and the interaction between child gender and mothers' challenging parenting behaviour were introduced in Steps 2 and 3, the overall model became non-significant and neither predictor contributed significantly to the model ( $p > .05$ ).

#### 4. Discussion

The purpose of the present study was threefold: to examine the association between challenging parenting behaviour and childhood anxiety in both fathers and mothers; to examine the relationship between parent anxiety and challenging parenting behavior; and additionally, to consider the potential effects of child gender on these relationships. Overall, the findings showed that fathers reported more challenging parenting behaviour than

mothers. For fathers, challenging parenting behaviour was associated with lower report of child anxiety, although only at the symptom level. For mothers, significant relationships were found between challenging parenting behaviour and child anxiety at both symptom and diagnostic levels; more challenging parenting behaviour was associated with less child anxiety. Contrary to expectations, no significant association was found between parents anxiety and challenging parenting behaviour. Additionally, child gender did not moderate the association between challenging parenting behaviour and children's anxiety.

The finding that fathers reported significantly greater challenging parenting behaviour than mothers is consistent with the theoretical literature reviewed earlier, which proposes that one of the important parenting roles for fathers is to engage in challenging parenting behaviour (Bögels and Perotti, 2011; Bögels and Phares, 2008; Möller et al., 2013; Paquette, 2004). Our results suggest that, at the preschool age, fathers engage in more challenging parenting behaviour than mothers. This finding is consistent with previous studies which demonstrated that fathers' interactions with their preschool-aged children are often more physical, boisterous, and unpredictable than mothers' interactions (MacDonald and Parke, 1986; Paquette, 2004).

A key finding of the current study was that higher paternal challenging behaviour was associated with lower report of child anxiety symptoms. This is consistent with the theoretical model proposed by Bögels and Phares (2008), as well as Majdandžić and colleagues' recent empirical study (Majdandžić et al., 2014). However, the logistic regression analysis demonstrated that fathers' challenging parenting behaviour did not predict child anxiety at the diagnostic level (Table 5). Although this result may appear inconsistent with the hypothesis and the theoretical model proposed by Bögels and Phares (2008), perhaps fathers' challenging parenting behaviour is more influential at the symptomatic level of child anxiety and is not a strong enough characteristic alone to discriminate between children with an anxiety diagnosis and those without. Further, as this is the first study to use a diagnostic tool for the assessment of child anxiety, as opposed to observational and parent report (see Majdandžić et al. (2014)), the relationship between this parenting behaviour and child anxiety diagnosis needs to be replicated in future studies, and across measurement methods. Additionally, for the purposes of this study, challenging parenting behaviour was measured by the total score on the CPBQ (Majdandžić et al., 2010) and thus as a broad construct. It may be that sub-domains of this measure, for example rough-and-tumble play or risk-taking, may be a better indication of fathers' challenging behaviour, and more specifically affect child anxiety (Bögels and Phares, 2008).

Whilst the theoretical literature has provided a strong argument for a relationship between fathers and challenging parenting behaviour, the present study explores the important question of whether mothers' challenging parenting behaviour may also play a role towards child anxiety. The results provide support for this relationship, as mothers' challenging parenting behaviour was found to have a small yet significant negative association with child anxiety at both symptom and disorder level. This finding was not anticipated, as it seems to contrast that reported by Majdandžić et al. (2014) who found that observed maternal challenging parenting behaviour longitudinally increased observed social anxiety in their sample of 4 year-old children, over a period of six months. A potential explanation for these disparate findings may be that the studies used different measures to assess challenging parenting behaviour. While the present study used a newly developed questionnaire, yet to be psychometrically evaluated, the reliability of the measure was excellent. In contrast, the observations used in the study of Majdandžić et al. (2014) assessed challenging parenting behaviour in a small set of structured tasks, such

as making a puzzle, which may have been less optimal to assess all aspects (including physical ones) of this broad construct. Alternatively, parental perception of challenging behaviour may be subject to social desirability or other biases, which may be gender specific. Certainly, the comparison of observational and self-report measures of challenging parenting behaviour is warranted in future research. Another explanation for the different findings between our study and that of Majdandžić et al. (2014) with respect to maternal challenging behaviour, is that their study investigated the effect of parental challenging behaviour on the increase of child anxiety, thus looking at consequential effects, whereas we studied the cross-sectional association. Perhaps mothers' challenging behaviour is more influenced by the anxiety of the child than fathers, and fathers' challenging behaviour may have a different effect on the child than mothers' challenging behaviour. Due to the strong theoretical argument for the role of fathers in this domain, this finding for mothers presents an exciting area for future research. Perhaps it is not surprising that mothers challenging parenting behaviour was found to relate to child anxiety; mothers typically spend more time with their children than fathers, especially at this younger age (for a review, see Möller et al. (2013)). Consequently, this may provide ample time for this parenting behaviour to affect child anxiety. Nevertheless, findings of this association for both caregivers lends support to the argument that parental engagement in challenging parenting behaviour, including rough-and-tumble play, encouraging children to step out of their comfort zone and take risks, presents an important parenting domain warranting further investigation.

It has been suggested that if a parent is anxious they may be less likely to engage in behaviour they find challenging or scary or may prevent their children from engaging in situations with an element of risk, interfering with their ability to engage in challenging parenting behaviour with their children (Bögels et al., 2008). The findings of this study gave no indication that parental anxiety impacted challenging parenting behaviour. As, to the authors' knowledge, this is the first study to empirically test this relationship; further research is required before conclusions can be drawn. However, given that the presence of parental anxiety has been hypothesised to exacerbate other parenting behaviours, such as overprotection (Hudson and Rapee, 2001), it is encouraging that challenging parenting behaviour may be relatively stable in the presence of parental psychopathology. Alternatively, it may be that challenging parenting behaviour may differ only for parents with clinical levels of anxiety. In the current study the representation of parents reporting elevated anxiety may not have been high enough to detect this relationship. In fact, only 14.1% of parents in the present sample had a total DASS anxiety score above the population mean of 4.7 (as per the DASS manual; Lovibond and Lovibond (1995)). Consequently, it remains possible that parental anxiety may impact the relationship towards challenging parenting behaviour however this may not have been captured using the community sample recruited for the present study.

In addition to these primary hypotheses, the impact of child gender on challenging parenting behaviour was also explored. It was anticipated that mothers, and especially fathers, would be more likely to engage in challenging parenting behaviour with their sons, such as encouraging risk-taking and rough-and-tumble play, than with their daughters. Although both mothers and fathers reported challenging their male children more than their female children, this difference was not significant. Further, when child gender was added into father and mother regression models there were no significant effects of child gender or significant interactions. Despite some literature indicating that child gender influences parenting interactions (Lindsey and Mize, 2001; Morrongiello and Dawber, 2000), the pattern of findings reported in the current study is in keeping with the results of a meta-analysis

showing non-significant or small effect sizes for parents' differential socialisation of boy and girls (Lytton and Romney, 1991). Based on these findings it may be interpreted that Australian parents are moderately egalitarian in their engagement with challenging parenting behaviour for male and female children. To confirm this, it may be required to compare challenging parenting behaviour of both caregivers in families with male and female children.

The results of the present study provide important evidence regarding the relationship between fathers' challenging parenting behaviour and childhood anxiety and additionally provide novel insight into this relationship for mothers. However, the limitations of the study should be considered. First, the cross-sectional design of this study means that it is not possible to delineate cause and effect. For example, it could be that parenting a child expressing symptoms of anxiety leads a parent to inhibit the amount of challenging behaviour they engage in with their child. Second, although the main focus of this present study was on the father-child relationship, a limitation in interpreting the current findings is the shared method variance from mothers. As mentioned, this study was part of a larger RCT, where additional maternal characteristics were of interest. Consequently, diagnostic interviews and surveys regarding child anxiety were conducted solely with the child's mother. As this is the first study to display these findings for mothers, these results need to be replicated, and with different modes of measurement so as to explore the mechanisms that might drive this association for mothers. For example, both mothers and fathers could report on their child's anxiety. Further, mothers could report on their own, as well as fathers' challenging parenting behaviour and vice versa (Bögels and van Melick, 2004). Finally, as previously mentioned, a comparison between observational as opposed to self-report measurement for challenging parenting behaviour is required and future research may wish to explore the specific sub-types of challenging parenting behaviour (e.g. rough-and-tumble play, risk-taking) which may be of greater relevance for fathers. Although these various limitations could not be addressed in the present study, they present varied and exciting avenues for future research.

The findings provide promising evidence that both paternal and maternal challenging behaviour may hold a protective relationship towards child anxiety. More broadly, this research also addresses a call in recent years for greater attention to the role of the father in the aetiology, maintenance, and prevention of child anxiety disorders (Bögels and Phares, 2008). The findings of the current study have implications not only for research but also for the development of interventions for anxious children and their parents. In a recent study, parents of anxious children identified concerns regarding whether they should challenge their children's behaviour and to what extent (Hiebert-Murphy et al., 2012). Continuing research in this area may provide valuable feedback for parents about optimal parenting strategies in the face of child anxiety. Additionally, these findings may have implications for cognitive behavioural treatments with anxious children. For example, a parent may be more willing to encourage and model brave behaviour to their child, especially during exposure sessions, if there is sound empirical rationale for this behaviour.

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